Barix STL connection over Internet

This document describes some different methods to make a
STL connection (Studio Transmitter Link) over internet with Barix Instreamer and Barix Exstreamer .
In the last chapters you can also find information about port forwarding (opening firewall) on the
router and DNS. The technology is perfect to stream permanent (even 24 hour/day service) audio
from point A (Instreamer in the studio) to point B (Exstreamer on the transmitter/antenna).
For a Instreamer-Exstreamer connection in a local LAN environment is a separate guide existing !

Following you can find three different setups: HTTP link over internet
                                                   RTP link over internet
                                                   BRTP link over internet.

**All example configurations use the IP settings from the screenshots/picture from the last
two chapters**. For the Exstreamer are two different firmwares existing the **standard Exstreamer
firmware** and **the Exstreamer Streaming Client firmware**, this guide shows examples for both.
Both firmwares are available on www.barix.com .

Don´t forgot to configure a valid gateway entry in the setup for the Instreamer and also the
Exstreamer, that is required in all three modes over Internet !
If you use DNS names then you have to define also a valid DNS Server.

HTTP link over Internet

Advantage of this method is that any PC or Exstreamer can make a permanent connection or only
listen the stream on request. It is using the TCP protocol . If the network is down for a while then
the Exstreamer will automatically reconnect . This method can be used with the standard Exstreamer
firmware and also with the Exstreamer Streaming Client firmware.

Instreamer (e.g. 192.168.110.175)
under Streaming :
Radio Path : /xstream
Stream to : Internet Radio : 0.0.0.0 : 80 (this opens a local listen port where Exstreamer connect to)

Exstreamer (e.g. 192.168.1.20)
under Streaming :
Mode :   3 Streaming Puller
Server IP address :   IP of the Instreamer´s router (IP from ISP) e.g. 71.42.85.19
Server Port :   forwarded port on Instreamer´s router,   e.g. 80
Server Path :   /xstream

Or for Exstreamer Streaming Client firmware:
URL x (e.g) :   http://71.42.85.19:80/xstream

On the Instreamer´s network you have to open the firewall and to make a TCP port forwarding
(see chapter Port forwarding), so that the Exstreamer´s request is forwarded from the firewall to
the Instreamer.

If the router on the Instreamer´s network has no static IP address from the ISP, then you can use a
DNS address :
Exstreamer Streaming Client firmware under URL x (e.g.) : http://myhome.dyndns.org:80/xstream
Standard firmware under STREAMING–Init Sequence (e.g) : S=http://myhome.dnydns.org:80/xstream

RTP over Internet

For a permanent STL connection from Instreamer to Exstreamer RTP or BRTP is probably the best solution from our view. More information about the RTP /BRTP protocol are available on our RTP guide from www.barix.com (on Downloads – Application Notes). RTP/ BRTP are using the UDP protocol.

Instreamer (e.g. 192.168.110.175) needs min. firmware 2.02
under Audio :
MP3 Bitreservoir mode : kept empty

under Streaming :
Stream to :
RTP :   IP of the router on Exstreamer´s network : forwarded UDP port on the router
e.g. Stream to : RTP : 84.29.3.105 : 4444

Exstreamer (e.g. 192.168.1.20) needs min. firmware 8.05
under Streaming :
Mode :   4 Streaming Receiver
RTP RX Port : 4444
UDP Start Threshold : min. 15000 (or higher, this defines the buffer/latency for the RTP stream)

Or for Exstreamer Streaming Client firmware:
URL x : rtp://0.0.0.0:4444

On the Exstreamer´s network you have to open the firewall and to make a UDP port forwarding (see chapter Port forwarding), so that the Instreamer´s stream is forwarded from the firewall to the Exstreamer.
DNS names are not supported in this mode, the Exstreamer´s router needs a static IP address !

BRTP over Internet

For this mode you need Instreamer firmware 2.03 or higher and Exstreamer Streaming Client firmware 1.26 or higher. It does currently not work with the standard Exstreamer firmware !
For many customer's this is probably the best solution, because it´s reliable and works with DNS names. BRTP uses UDP, so you have to make a UDP port forwarding on the router in the Instreamer's network .

Instreamer (e.g. 192.168.110.175) needs min. firmware 2.03
under Audio :
MP3 Bitreservoir mode :   kept empty

under Streaming :
Stream to e.g. :   BRTP : 0.0.0.0 : 4444
Only on the first entry / line available !!!   Don´t use line 2 –8 for this setting !
This opens the UDP port, where the Exstreamers (multiple !) can pull the stream from .

Exstreamer Streaming Client (e.g. 192.168.1.20) needs min. firmware 1.26
URL x : brtp://router IP from the Instreamer's network : forwarded UDP port on the router
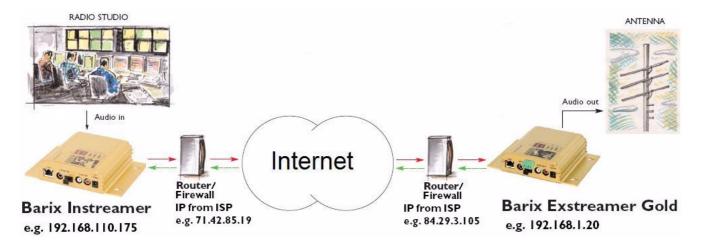e.g. URL x : brtp://71.42.85.19:4444
or
URL x : brtp://DNS name of the router in Instreamer's network : forwarded UDP port on the router
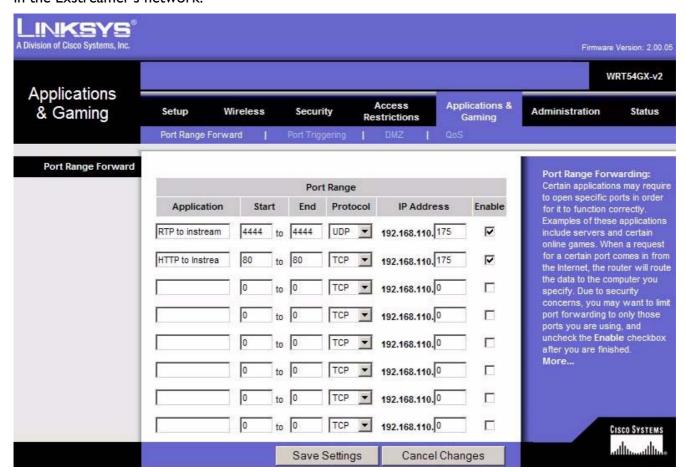e.g. URL x : brtp://myhome.dyndns.org:4444

Port forwarding on routers / firewalls

Usually the very most ports on routers/firewalls are closed for incoming internet connections.
With a port forwarding you open a port on the firewall/router and you specify where the router
has to forward the internet traffic which is incoming on this port to the internal network.

To make a device reachable through a router you have usually two options on the router/firewall :
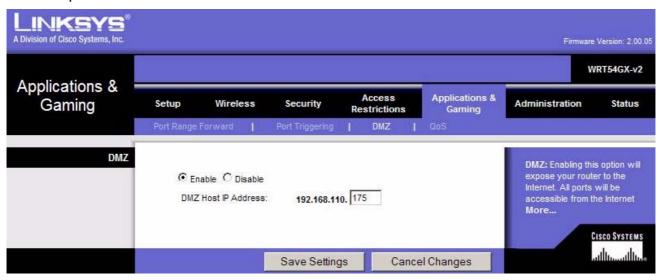1st : port forwarding   2nd : DMZ (DeMilitarized Zone)

Following you can see some screenshots of the very popular LINKSYS WRT54Gx router series.
In the configuration examples above is the IP address 192.168.110.175 used for the Instreamer.
The next screenshot shows what settings are needed on the router for the HTTP and BRTP
example above. RTP would need a similar UDP entry for the Exstreamer IP address on the router
in the Exstreamer's network.

Here is a TCP port forwarding for port 80 and additional there is a port forwarding for
UDP port 4444. Port forwarding opens only one port or a limited range of ports.

DMZ allows you to put a whole unit to the internet, with all ports (UDP and TCP). The unit is then excepted of the firewall security. Everyone has then full access if the device isn't password protected.

For example: The Instreamer has IP address 192.168.110.175 .

Over the public IP address 71.42.85.19 (from ISP) you can reach now the Instreamer.
Note, if you enable DMZ, then port forwarding should be not active on the same router !
I would prefer port forwarding instead of DMZ .

DNS (Domain name service)

When your routers have not got a fix IP address from the ISP (Internet service provider) and the dynamic IP address changes every day, then it makes sense to use a DNS name because you cannot not change the configuration of the Instreamer / Exstreamer every day .
DNS translates a unique name to a IP address. On the Internet there are some DNS registration services, DYNDNS.org is a very popular DNS service and supported from many routers.
Before you can use a DYNDNS – DNS name you have create a account on www.dyndns.org , and to select/register your DNS name. The account and the registration of a DNS name on DYNDNS is for free. The name should be a little more specific as my example (myhome) and must be unique in the whole world. When you have created your account and registered a valid DNS name then you have to configure your router, that the router updates the DYNDNS server every time when the router gets a new IP address from the ISP. Check first which services are supported on your router.